MENDUMS POND

2015 SAMPLING HIGHLIGHTS

Station – South Dam

Barrington, NH

University of New Hampshire Cooperative Extension

Station 1 South Dam was used as a reference point to represent the overall Mendums Pond water quality.

Blue = Excellent = Oligotrophic

Yellow = Fair = Mesotrophic

Red = Poor = Eutrophic

Gray = No Data

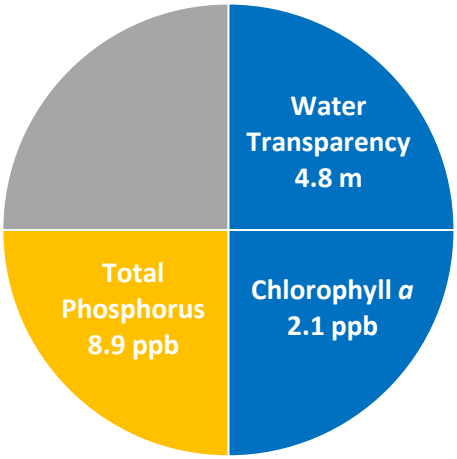


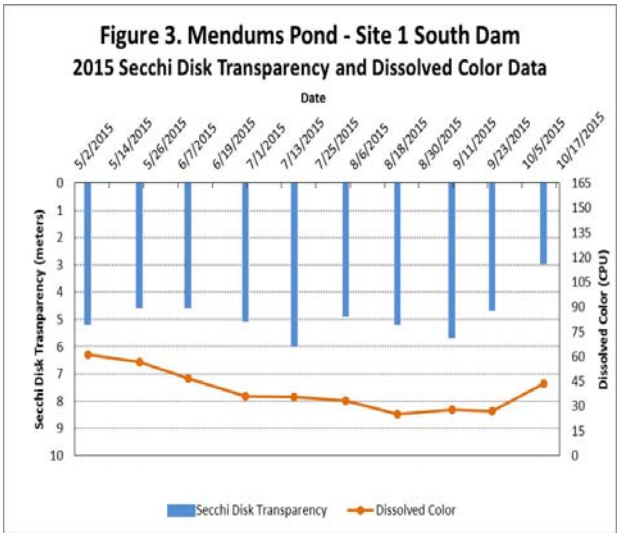
Figure 1. Mendums Pond Water Quality (2015)

Table 1. 2015 Mendums Pond Seasonal Averages and NH DES Trophic Level Classification Criteria

Parameter	Oligotrophic "Excellent"	Mesotrophic "Fair"	Eutrophic "Poor"	Mendums Pond Average (range)	Mendums Pond Classification
Water Clarity (meters)	4.0 – 7.0	2.5 - 4.0	< 2.5	**4.8** meters (2.9 – 5.9)	Oligotrophic
Chlorophyll *a* (ppb)	< 3.3	> 3.3 – 5.0	> 5.0 – 11.0	**2.1** ppb (0.9 – 3.0)	Oligotrophic
Total Phosphorus (ppb)	< 8.0	> 8.0 – 12.0	> 12.0 – 28.0	**8.9** ppb (4.5 – 16.9)	Mesotrophic

Table 2. 2015 Mendums Pond Seasonal Average Accessory Water Quality Measurements

Parameter	Assessment Criteria					Mendums Pond Average (range)	Mendums Pond Classification
Color (color units)	< 10 uncolored	10 – 20 slightly colored	20 – 40 Lightly tea colored	40 – 80 tea colored	> 80 highly colored	**39.4** color units (25.1 – 61.3)	Lightly tea colored
Alkalinity (mg/L)	< 0.0 acidified	0.1 – 2.0 extremely vulnerable	2.1 – 10 moderately vulnerable	10.1 – 25.0 low vulnerability	> 25.0 not vulnerable	**1.6** mg/L (1.3 – 1.7)	Extremely vulnerable



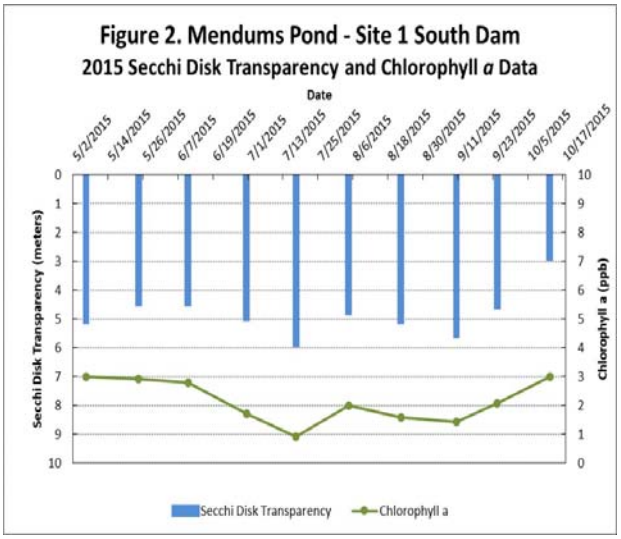


Figure 2 and 3. Seasonal Secchi disk transparency, chlorophyll *a* changes and dissolved color concentrations. Figures 2 and 3 illustrate the interplay among Secchi Disk transparency, chlorophyll *a* and dissolved color. Shallower water transparency measurements oftentimes correspond to increases in chlorophyll *a* and/or color concentrations.

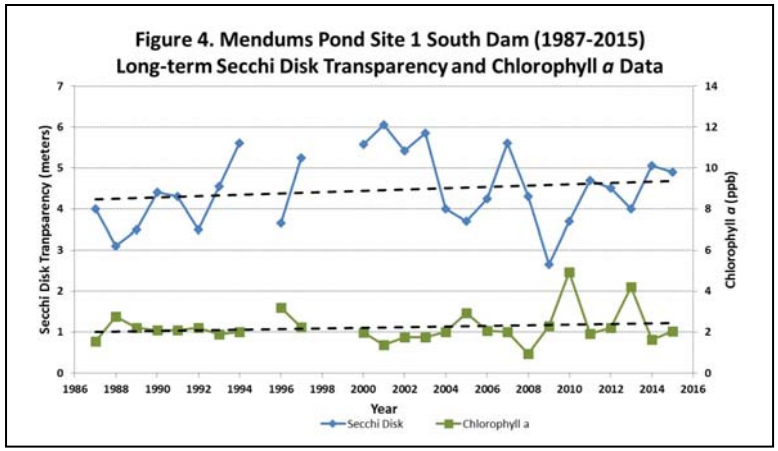
LONG-TERM TRENDS

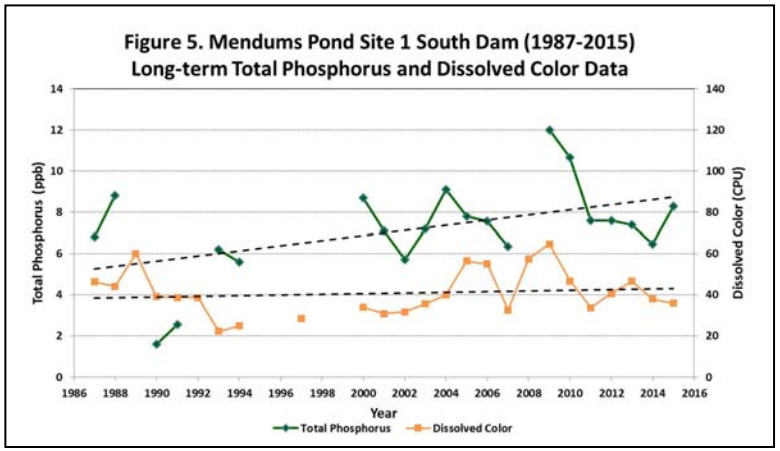
WATER CLARITY: The Mendums Pond water clarity measurements, measured as Secchi Disk transparency, display a trend of increasing water clarity (Figure 4). The water clarity has increased by approximately 40 centimeters (Figure 4).

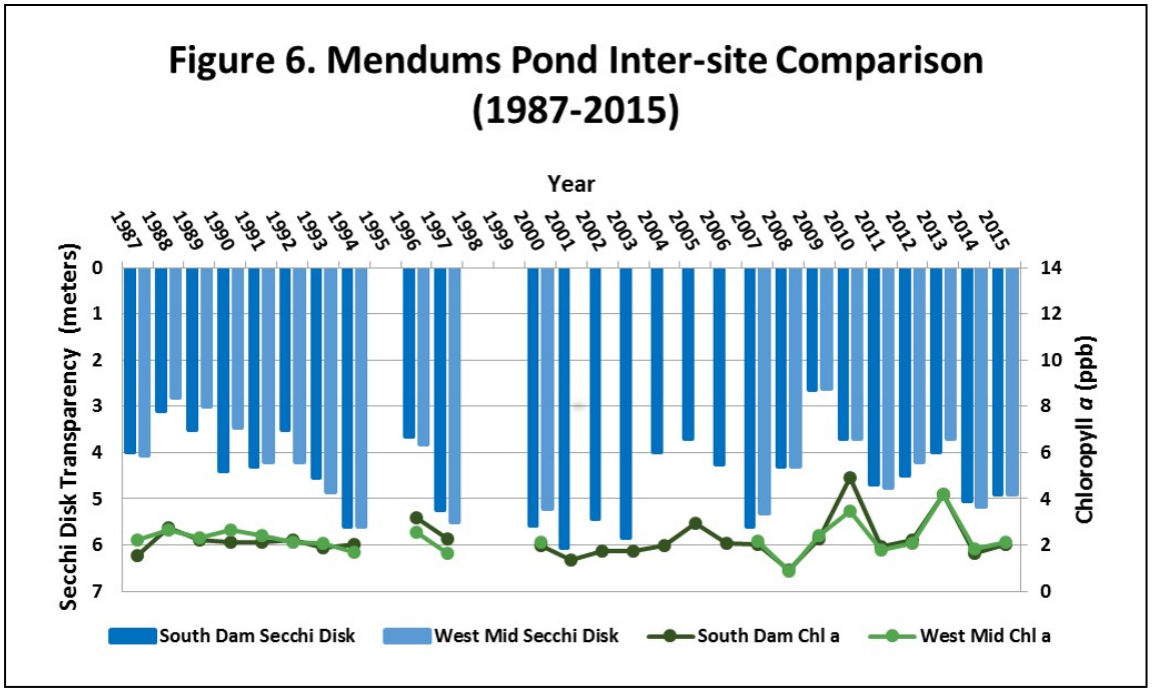
CHLOROPHYLL: The Mendums Pond chlorophyll *a* concentrations, a measure of microscopic plant life within the lake, display a trend of increasing concentrations (Figure 4). The chlorophyll *a* concentration has increased approximately 0.4 parts per billion (Figure 4).

TOTAL PHOSPHORUS: Phosphorus is the nutrient most responsible for microscopic plant growth. The Mendums Pond total phosphorus concentrations display a trend of increasing concentrations (Figure 5).

COLOR: The Mendums Pond color data, the result of naturally occurring "tea" color substances from the breakdown of soils and plant materials, display a trend of increasing concentrations (Figure 5).







Figures 4 and 5. Long-term changes in the Mendums Pond water clarity (Secchi Disk depth), chlorophyll *a*, water color and total phosphorus concentrations measured between 1987 and 2015. **These data illustrate the relationship among plant growth, water color and water clarity. Total phosphorus data are also displayed and are oftentimes correlated with the amount of plant growth.**

Figure 6. Inter-site comparison of the annual Mendums Pond South Dam (dark shading) and West Mid (light shading) water clarity and chlorophyll *a* concentrations. The inter-site comparison data provide a general sense of the variability between the two long-term Mendums Pond sampling locations.

Recommendations

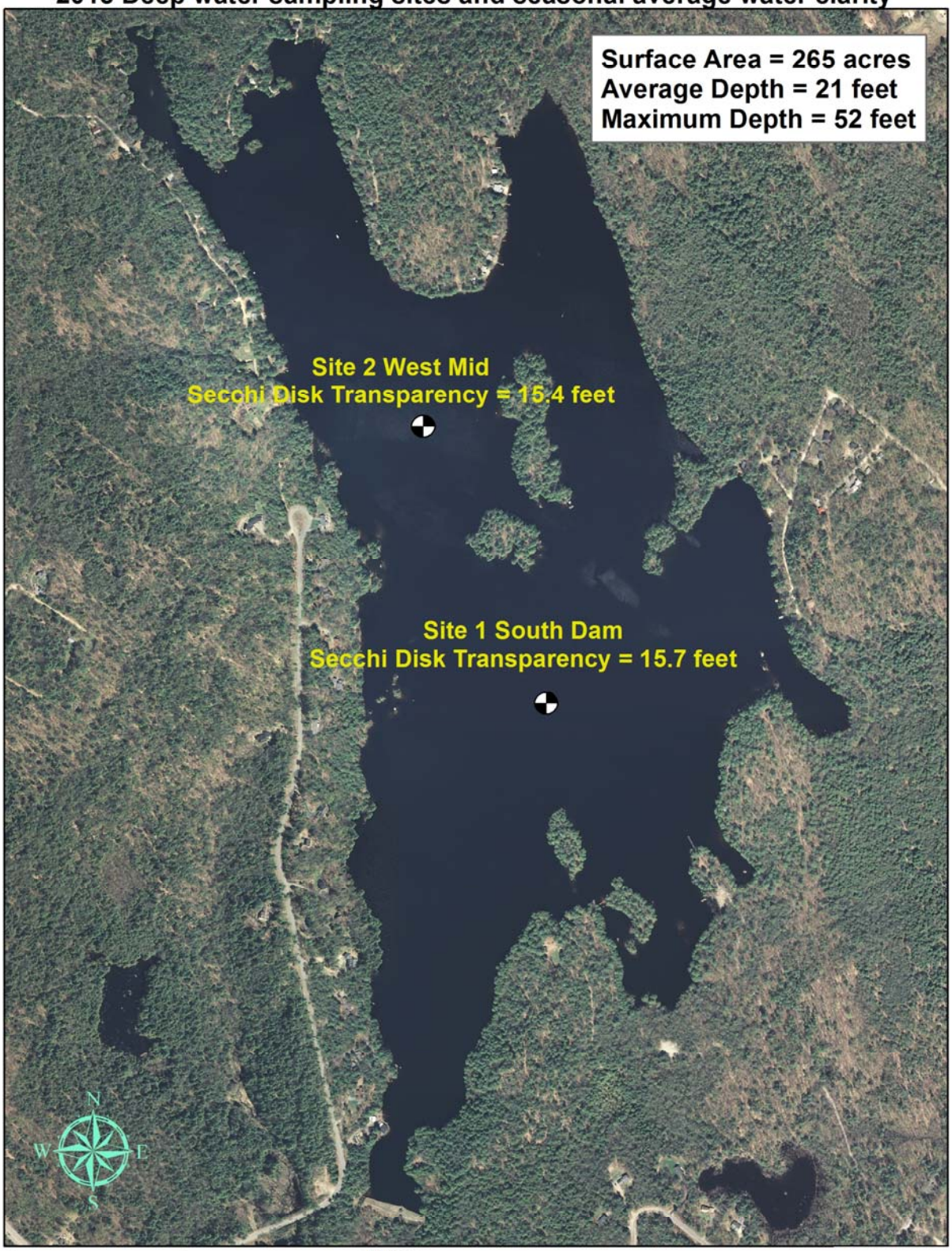
Implement Best Management Practices within the Mendums Pond watershed to minimize the adverse impacts of polluted runoff and erosion into Mendums Pond. Refer to "Landscaping at the Water's Edge: An Ecological Approach" and "New Hampshire Homeowner's Guide to Stormwater Management: Do-It-Yourself Stormwater Solutions for Your Home" for more information on how to reduce nutrient loading caused by overland run-off.

- http://extension.unh.edu/resources/files/Resource004159_Rep5940.pdf
- http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-11.pdf

Figure 7. Mendums Pond

Barrington, NH

2015 Deep water sampling sites and seasonal average water clarity



University of New Hampshire Cooperative Extension

NEW HAMPSHIRE LAKES LAY MONITORING

Aerial Orthophoto Source: NH GRANIT
Site locations GPSed by the UNH Center for Freshwater Biology